

IN THE CLAIMS

Please amend the claims without prejudice, as follows:

1. (Withdrawn) A phosphorus-containing solution comprising a mixture of salts and a carrier fluid, the salts comprising:

$[Y]H_2PO_4$; and

$[Y]_2HPO_4$, where $[Y]$ is a cation,

the carrier fluid being operable to maintain the salts within the carrier fluid in at least a partially dispersed state, the phosphorus-containing solution being operable to create a phosphate-metal layer on a metal substrate when the phosphorus-containing solution is placed in contact with the metal substrate, the phosphorus-containing solution being essentially free of zinc and the mixture to form the phosphorus-containing solution being mixed in the absence of a highly exothermic reaction.

2. (Withdrawn) The phosphorus-containing solution of claim 1 further comprising $[NR_4]_2HPO_4$ wherein R is selected from the group consisting of hydrogen, alkyl groups and combinations thereof.

3. (Withdrawn) The phosphorus-containing solution of claim 2 wherein substantially no free ammonia is present.

4. (Withdrawn) The phosphorus-containing solution of claim 1 further comprising $[X]C_2H_3O_2$ where $C_2H_3O_2$ is an acetate group and $[X]$ is a cation.

5. (Withdrawn) The phosphorus-containing solution of claim 4 wherein $[X]$ is selected from the group consisting of potassium, NH_4 , and combinations thereof.

6. (Withdrawn) The phosphorus-containing solution of claim 1 wherein the pH of the phosphorus-containing solution is between about 6.0 and 8.0.

7. (Withdrawn) The phosphorus-containing solution of claim 1 wherein Y in $[Y]H_2PO_4$ is potassium.

8. (Withdrawn) The phosphorus-containing solution of claim 1 wherein Y in $[Y]_2HPO_4$ is potassium.
9. (Withdrawn) The phosphorus-containing solution of claim 1 wherein Y in $[Y]H_2PO_4$ and $[Y]_2HPO_4$ is selected from alkali metals.
10. (Withdrawn) The phosphorus-containing solution of claim 1 further comprising a dispersant.
11. (Canceled)
12. (Canceled)
13. (Canceled)
14. (Currently Amended) A process for creating a phosphate-metal layer on a metal substrate where the metal substrate is in at least partial contact with a target fluid, the target fluid comprising a hydrocarbon, the process comprising adding an amount of a phosphorus-containing solution to the target fluid effective to create the phosphate-metal layer, the target fluid combined with the phosphorus-containing solution being brought into contact with the metal substrate such that the phosphate-metal layer results on the metal substrate, wherein the metal substrate comprises at least part of an engine, wherein the phosphorus-containing solution comprises a mixture of salts and a carrier fluid, the salts comprising:

$[Y]H_2PO_4$; and

$[Y]_2HPO_4$, where [Y] is a cation,

the carrier fluid being operable to maintain the salts within the carrier fluid in at least a partially dispersed state, the phosphorus-containing solution being operable to create the phosphate-metal layer on the metal substrate when the phosphorus-containing solution is placed in contact with the metal substrate under engine operating conditions, the phosphorus-containing solution being essentially free of zinc, the phosphorus-containing solution being essentially free of alcohol, and the mixture to form the phosphorus-containing solution being mixed in the absence of a highly exothermic reaction.

15. (Original) The process of claim 14 wherein the phosphorus-containing solution further comprises $[\text{NR}_4]_2\text{HPO}_4$ wherein R is selected from the group consisting of hydrogen, alkyl groups and combinations thereof.

16. (Original) The process of claim 15 wherein the phosphorus-containing solution further comprises $\text{NH}_4\text{C}_2\text{H}_3\text{O}_2$ where $\text{C}_2\text{H}_3\text{O}_2$ is an acetate group.

17. (Original) The process of claim 16 wherein the pH of the phosphorus-containing solution is between about 6.0 and 8.0.

18. (Original) The process of claim 14 wherein the Y in $[\text{Y}]\text{H}_2\text{PO}_4$ in the phosphorus-containing solution is potassium.

19. (Original) The process of claim 14 wherein the Y in $[\text{Y}]_2\text{HPO}_4$ in the phosphorus-containing solution is potassium.

20. (Previously Presented) The process of claim 14 wherein the target fluid is selected from the group consisting of lubricating fluid and phosphating bath.

21 – 33. Canceled

34. Not entered

35. (Currently Amended) A process for creating a phosphate-metal layer on a metal substrate where the metal substrate is in at least partial contact with a target fluid, the target fluid comprising a hydrophilic fluid, the process comprising adding an amount of a phosphorus-containing solution to the target fluid effective to create the phosphate-metal layer, the target fluid combined with the phosphorus-containing solution being brought into contact with the metal substrate such that the phosphate-metal layer results on the metal substrate, wherein the metal substrate comprises at least part of an engine, wherein the phosphorus-containing solution comprises a mixture of salts and a carrier fluid, the salts comprising:

$[\text{Y}]\text{H}_2\text{PO}_4$; and

$[\text{Y}]_2\text{HPO}_4$, where [Y] is a cation;

the carrier fluid being operable to maintain the salts within the carrier fluid in at least a partially dispersed state, the phosphorus-containing solution being essentially free of alcohol, the phosphorus-containing solution being operable to create the phosphate-metal layer on the metal substrate when the phosphorus-containing solution is placed in contact with the metal substrate under engine operating conditions, wherein the metal substrate is a steel alloy, and the mixture to form the phosphorus-containing solution being mixed in the absence of a highly exothermic reaction.

36. (Previously Presented) The process of claim 35 wherein the phosphorus-containing solution further comprises $[\text{NR}_4]_2\text{HPO}_4$ wherein R is selected from the group consisting of hydrogen, alkyl groups and combinations thereof.

37. (Previously Presented) The process of claim 36 wherein the phosphorus-containing solution further comprises $\text{NH}_4\text{C}_2\text{H}_3\text{O}_2$ where $\text{C}_2\text{H}_3\text{O}_2$ is an acetate group.

38. (Previously Presented) The process of claim 37 wherein the pH of the phosphorus-containing solution is between about 6.0 and 8.0.

39. (Previously Presented) The process of claim 35 wherein the Y in $[\text{Y}]\text{H}_2\text{PO}_4$ in the phosphorus-containing solution is potassium.

40. (Previously Presented) The process of claim 35 wherein the Y in $[\text{Y}]\text{H}_2\text{PO}_4$ in the phosphorus-containing solution is potassium.

41. (Currently Amended) A process for creating a phosphate-metal layer on a metal substrate where the metal substrate is in at least partial contact with a target fluid, ~~the target fluid comprising a hydrocarbon,~~ the process comprising adding an amount of a phosphorus-containing solution to the target fluid effective to create the phosphate-metal layer, the target fluid combined with the phosphorus-containing solution being brought into contact with the metal substrate such that the phosphate-metal layer results on the metal substrate, wherein the metal substrate comprises at least part of an engine, wherein the phosphorus-containing solution comprises a mixture of salts and a carrier fluid, the salts comprising:



$[Y]_2HPO_4$, where [Y] is a cation; and

$[NR_4]_2HPO_4$, wherein R is selected from the group consisting of hydrogen, alkyl groups and combinations thereof,

the carrier fluid being operable to maintain the salts within the carrier fluid in at least a partially dispersed state, the phosphorus-containing solution being operable to create the phosphate-metal layer on the metal substrate when the phosphorus-containing solution is placed in contact with the metal substrate under engine operating conditions, wherein the metal substrate is a steel alloy, and the mixture to form the phosphorus-containing solution being mixed in the absence of a highly exothermic reaction.

42. (Previously Presented) The process of claim 41 wherein the phosphorus-containing solution further comprises $NH_4C_2H_3O_2$ where $C_2H_3O_2$ is an acetate group.

43. (Previously Presented) The process of claim 42 wherein the pH of the phosphorus-containing solution is between about 6.0 and 8.0.

44. (Previously Presented) The process of claim 41 wherein the Y in $[Y]_2H_2PO_4$ in the phosphorus-containing solution is potassium.

45. (Previously Presented) The process of claim 41 wherein the Y in $[Y]_2HPO_4$ in the phosphorus-containing solution is potassium.

46. (Currently Amended) A process for creating a phosphate-metal layer on a metal substrate where the metal substrate is in at least partial contact with a target fluid, the target fluid comprising a hydrocarbon, the process comprising adding an amount of a phosphorus-containing solution to the target fluid effective to create the phosphate-metal layer, the target fluid combined with the phosphorus-containing solution being brought into contact with the metal substrate such that the phosphate-metal layer results on the metal substrate, wherein the metal substrate comprises at least part of an engine, wherein the phosphorus-containing solution comprises a mixture of salts and a carrier fluid, the salts comprising:

$[Y]H_2PO_4$;

$[Y]_2HPO_4$, where [Y] is a cation; and

$[\text{NR}_4]_2\text{HPO}_4$, wherein R is selected from the group consisting of hydrogen, alkyl groups and combinations thereof,

the carrier fluid being operable to maintain the salts within the carrier fluid in at least a partially dispersed state, the phosphorus-containing solution being operable to create the phosphate-metal layer on the metal substrate when the phosphorus-containing solution is placed in contact with the metal substrate under engine operating conditions, and the mixture to form the phosphorus-containing solution being mixed in the absence of a highly exothermic reaction.

47. (Previously Presented) The process of claim 46 wherein the phosphorus-containing solution further comprises $\text{NH}_4\text{C}_2\text{H}_3\text{O}_2$ where $\text{C}_2\text{H}_3\text{O}_2$ is an acetate group.

48. (Previously Presented) The process of claim 47 wherein the pH of the phosphorus-containing solution is between about 6.0 and 8.0.

49. (Previously Presented) The process of claim 46 wherein the Y in $[\text{Y}]\text{H}_2\text{PO}_4$ in the phosphorus-containing solution is potassium.

50. (Previously Presented) The process of claim 46 wherein the Y in $[\text{Y}]\text{H}_2\text{PO}_4$ in the phosphorus-containing solution is potassium.